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A new species of *Platycampus* (Hymenoptera, Tenthredinidae) from China, with an identification key to the world species

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Abstract

Platycampus Schiödte, 1839 is distributed in Europe and East Asia, with ten described species. A new species, *P. rufitegularis* **sp. nov.**, is described and illustrated from Zhejiang Province, China, representing the third *Platycampus* species recorded in China. Diagnostic illustrations of morphological characters for all three Chinese species and a key to the world species of *Platycampus* are provided. The partial mitochondrial genome of *P. rufitegularis* (16,103 bp; GenBank: PX129881) was assembled into 36 genes, including: 13 protein-coding genes, 21 tRNAs, and 2 rRNAs; trnD and the control region (CR) are missing from the assembly. The A+T content is 80.1%. Phylogenetic analyses resolved *P. rufitegularis* as sister to *P. amurensis* Zinovjev, 1986, and this clade forms a supported lineage within the monophyletic genus *Platycampus*.

Keywords

China, key, Nematinae, new species, *Platycampus*

Introduction

Platycampus Schiödte, 1839 is a small genus within the subfamily Nematinae (Hymenoptera, Tenthredinidae), with ten described species. The genus occurs in East Asia and

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Europe, with species distributions as follows: Japan (2 species), China (2 species), Russia (6 species, including populations in European Russia), and Europe (2 species) (Fallén 1808; Konow 1896; Verzhutskii 1966; Zinovjev 1986; Togashi 1991; Taeger et al. 2010; Wei 2024). Larvae of this genus feed exclusively on Betulaceae, with documented hosts spanning *Corylus* (hazels), *Betula* (birches), and *Alnus* (alders) (Zinovjev 1986).

During a sawfly survey at Mt. Xitianmu, Zhejiang Province, multiple specimens of *Platycampus* were collected by sweep netting and Malaise trapping. Distinct morphological characters (diagnosed in the Results section) differentiate this species from all known specie, the status further corroborated by COI-based phylogenetic analysis under maximum likelihood. Based on this integrative evidence, we formally describe it as *P. rufitegularis* sp. nov. Herein, morphological description and illustrations of the new species are provided (Figs 1–3), along with diagnostic illustrations of the other two Chinese *Platycampus* species: *P. linealis* Liu & Wei, 2024 (Fig. 4, described in Wei 2024) and *P. xini* Liu & Wei, 2025 (Fig. 5, described in Li and Wei 2025). Additionally, an identification key to all known species of the genus, partial mitochondrial genome and a phylogenetic tree based on the COI gene are provided.

Material and methods

Morphological methods

The specimens were examined with a Motic-SMZ-171 stereomicroscope. Images of the imagines were taken with a Nikon D700 digital camera and a Leica Z16APO separately. The genitalia were examined with a Motic BA410E microscope, and images of the genitalia were taken with Motic Moticam Pro 285A. The series of images produced were focus-stacked using Helicon Focus (HeliconSoft, Kharkiv, Ukraine) and further processed with Adobe Photoshop 2025. Specimens examined in this study are deposited in the Asian Sawfly Museum, Nanchang, China (**ASMN**).

The terminology of genitalia follows Ross (1945) and that of general morphology follows Viitasaari (2002). For a few terms, including middle fovea, lateral fovea, and lateral walls, we follow Takeuchi (1952).

Abbreviations used in the text and illustrations are as follows:

OCL The distance between a lateral ocellus and the occipital carina, or the hind margin of the head where this carina would be if it were developed (Benson 1954);
OOL The distance between an eye and a lateral ocellus;
POL The distance between the mesal margins of the 2 lateral ocelli.

Molecular methods

The female specimen (LSAF-M0126) was collected from the Xianrending of Mt. West Tianmu, Lin'an District, Hangzhou City, Zhejiang, China on May 9, 2021. The mitochondrial genome sequence and associated annotation have been deposited at NCBI Gen-

Table 1. GenBank accession numbers of COI sequences in this work.

Species	GenBank accession number	Species	GenBank accession number
Dineura militaris (Cresson, 1880)	KY698157	*Nematinus caledonicus* (Cameron, 1882)	PP913027
Dineura parcivalvis (Konow, 1901)	MK624744	*Nematinus steini* Blank, 1998	PQ066304
Dineura testaceipes (Klug, 1816)	MK624743	*Nematus lucidus* (Panzer, 1801)	MK624685
Dineura virididorsata (Retzius, 1783)	KY698156	*Nematus princeps* Zaddach, 1876	KX602591
Euura cinereae Kopelke, 1996	PP913249	*Platycampus amurensis* Zinovjev, 1986	KY698149
Euura dolichura (Thomson, 1871)	PP913204	*Platycampus luridiventris* (Fallén, 1808)	MK624686
Euura pustulator (Forsius, 1923)	PP912798	*Platycampus rufitegularis* sp. nov.	PX129881
Fagineura crenativora Vikberg & Zinovjev, 2000	KF936593	*Platycampus speciosus* Zinovjev, 1986	KY698150
Hemichroa australis (Serville, 1823)	KY698147	*Pristiphora albitibia* (Costa, 1859)	MF426916
Hemichroa crocea (Geoffroy, 1785)	KF936606	*Pristiphora astragali* Vikberg, 1978	KX602574
Mesoneura truncatatheca Wei, 2013	KY698135	*Pristiphora fulviceps* Takeuchi, 1933	KY698114
Monocellicampa pruni Wei, 1998	KY698162	*Pristiphora opaca* Lindqvist, 1955	KX602552
Moricella rufonota Rohwer, 1916	MW487926	*Pseudodineura enslini* (Hering, 1923)	PQ066308
Nematinus acuminatus (Thomson, 1871)	MK624705	*Pseudodineura fuscula* (Klug, 1816)	MK624695

Bank under the accession number PX129881. Whole genomic DNA was extracted from the muscle of the female specimen using the TIANamp Genomic DNA Kit (Tiangen, Beijing, CN). Genomic DNA was sequenced by the high-throughput Illumina Hiseq 6000 platform, yielding a total of 27,619,650 raw reads (SRR34959474). DNA sequences were assembled by MitoZ v3.6 with the parameters – threads 16 (parallel computation) and – genetic_code 5 (invertebrate mitochondrial code) (Meng et al. 2019), and further verified by Geneious Prime v2025.1.3 (https://www.geneious.com) through comparisons to related species (*Hemichroa major* Rohwer, 1915, unpublished). Annotations were initially generated using the MITOS web server (Bernt et al. 2013). The coverage depth of the assembly was examined to identify anomalous regions, with unresolved positions marked as "N".

To discuss the taxonomic status of the new species, a COI-based phylogenetic tree of *Platycampus* and other Nematinae genera was reconstructed. All accession numbers are listed in Table 1. The sequences were aligned using MAFFT 7.313 (Katoh & Standley, 2013). The best-fitting DNA substitution model for the alignment sequences was selected using jModelTest 2.1.7 (Darriba et al. 2012). Maximum likelihood (ML) phylogenies were inferred using IQ-TREE webserver (http://iqtree.cibiv.univie.ac.at/) (Nguyen et al. 2015) with 1000 ultrafast bootstrap replicates.

Results

Taxonomy

Family Tenthredinidae Latreille, 1818

Subfamily Nematinae Meigen, 1818

Genus *Platycampus* Schiödte, 1839

Nematus (*Leptopus*) Hartig, 1837: 184.
Platycampus Schiödte, 1839: 20.

Erasminus Gistel, 1848: 9.
Camponiscus Newman, 1869: 215.

Type species. *Platycampus luridiventris* (Fallén, 1808).

Diagnosis. Body medium-sized, slightly narrow; clypeus elongate, significantly narrower than the distance at the lower eyes margin, apical emargination distinct; left mandible tapering apically; triangular in lateral view; malar space longer than diameter of median ocellus; distance between eyes significantly longer than the length of eyes; area between antennal sockets distinctly protruding forward; inner orbits not depressed; occiput non-elongated, laterally constricted, without occipital carina; postocellar area extremely short and broad; antennae slender, shorter than the combined length of the forewing costa and stigma; the width of antennomere 2 not less than its length; antennomere 3 not longer than antennomere 4; mesoscutellum flat, length subequal to width, mesoscutellar appendage without middle ridge; vein C of the forewing gradually dilated apically; vein 2r absent; veins 1m-cu and 2m-cu strongly convergent toward stigma, with 2m-cu meeting 1Rs cell at subapical position; veins 2A+3A curved upward, merging with vein 1A, anal cell closed; cells R1, Rs, M, and anal cell of the hindwing closed; petiole of anal cell of hindwing longer than cu-a; inner apical spur of hind tibia slightly longer than outer spur and longer than apical width of hind tibia; claws with large inner tooth; sawsheath elongate, tapering gradually from base to apex in dorsal view; cerci slender; penis valve with dorsal and ventral valvulae, apical spines protruding forward. Larval body flattened, with the thorax and abdomen laterally expanded (Smith 1976; Wong 1977; Togashi 1991; Wei 2024).

***Platycampus rufitegularis* Liu & Wei, sp. nov.**
https://zoobank.org/ED858E51-A1C9-4439-8BCC-462E72CCF3F1
Figs 1–3

Material examined. ***Holotype*,** • female, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, Xianrending, 30.349°N, 119.424°E, 1506 m, 9 May 2021, leg. Zejian Li. ***Paratypes*,** • 4 females, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, Xianrending, 30.349°N, 119.424°E, 1506 m, 9 May 2021, leg. Zejian Li; • 1 female, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, 1506 m, 5 June 2012, malaise trap; • 1 female, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, 1100–1500 m, 5–6 May 2017, leg. Wenxuan Bi; • 1 male, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, Xianrending, 30.350°N, 119.424°E, 1506 m, 3 May 2019, leg. Zejian Li; • 1 male, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, Kaishanlaodian, 30.323°N, 119.433°E, 1106 m, 28–29 April 2017, leg. Zejian Li, Mengmeng Liu, Kaiwen Gao & Tingting Ji. • 5 females (in alcohol), China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. West Tianmu, 1506 m, 9 May 2021, leg. Zejian Li. Voucher specimens: LSAF-M0126–M0130, mitochondrial genome sequencing was performed on LSAF-M0126.

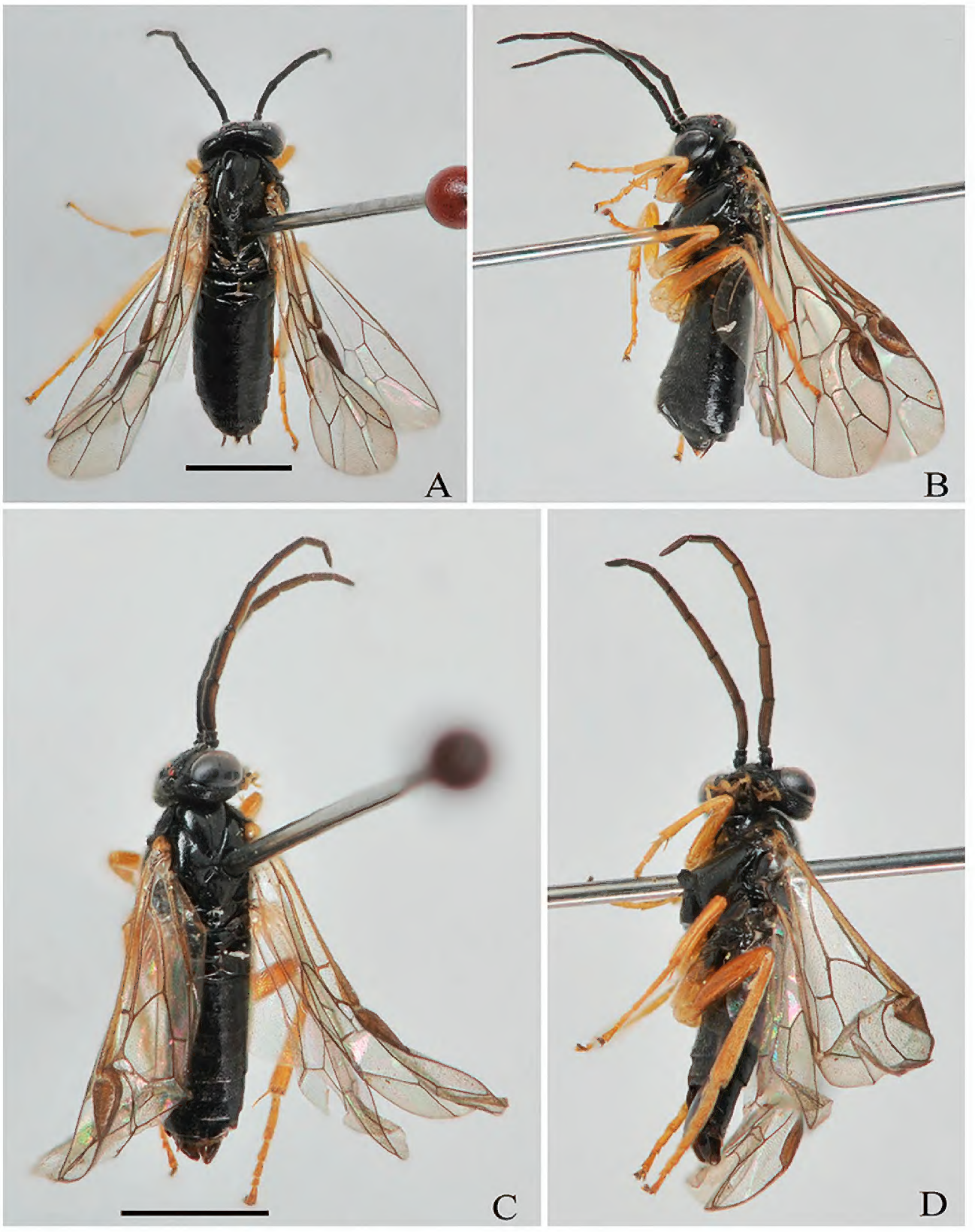

Figure 1. *P. rufitegularis* sp. nov., female holotype; male paratype **A** female, in dorsal view **B** female, in lateral view **C** male, in dorsal view **D** male, in lateral view. Scale bars: 2 mm (**A, C**); dorsal and lateral views of the adult specimens were taken at the same scale.

Diagnosis. Body black; legs yellowish-white to reddish-brown; tegula reddish-brown (Fig. 1); anterior margin of clypeus incised to 0.25 × length of clypeus, lateral corners rounded; malar space 1.5 × as long as diameter of median ocellus (Fig. 2B); middle fovea subcircular and slightly shallow, with a fine longitudinal groove at bottom extending to the frons; frontal area with a median longitudinal groove (Fig. 2A); relative length of antennomere 3 : antennomere 4 : antennomere 5 = 1 : 1.1 : 1 (Fig. 2C); median mesoscutal groove of mesonotum shallow and thin, extending to the apex (Fig. 2D); lower part of mesepisternum with glabrous area (Fig. 2E); protarsomere 1 0.8 × as long

Figure 2. Detailed morphological characters of *P. rufitegularis* sp. nov. **A** female, head, dorsal view **B** female, head, anterior view **C** female, antenna, lateral view **D** female, thoracic notum **E** female, thoracic pleuron **F** female, ovipositor sheath, lateral view **G** female, ovipositor sheath, dorsal view **H** male, abdominal apex, dorsal view.

as combined length of tarsomeres 2–4; hind tibia 1.2 × as long as hind tarsus; tarsal claw with inner tooth slightly shorter than outer tooth; valvula 3 about as long as valvifer 2 (Fig. 2F); lancet with 15 serrulae; annular suture 1 straight, sutures 1–9 with setae bands, longest setal band about 0.2 times as long as the length of annulus (Fig. 3A, B); tangium narrow and 4.1 × as long as annulus 1, radix 0.5 × as long as lamnium, the basal angle slightly acute (Fig. 3C); harpes inner surface swollen over basal third, apical width

0.3 × basal width (Fig. 3D); penis valve with narrow lobiform process slightly shorter than broad lobiform process, both processes dorsally inclined; broad lobiform process gradually narrowing from midlength toward apex, lateral margins converging at 145°; basal interval between processes 0.5 × basal width of narrow lobiform process (Fig. 3E).

Description. Holotype, female. Body length approximately 6.5 mm (Fig. 1A, B).

Color. Body black. All legs yellowish-white to reddish-brown except for a small black area at the base of all coxae; labrum dusky brown; maxillary palps yellowish-brown; tegula reddish-brown; cenchrus pale white. Wings hyaline, basal part of vein C in the forewing yellowish-brown; stigma and veins brown to blackish-brown (Fig. 1A, B).

Head. Labrum nearly flat, apex rounded; clypeus broad, distinctly narrower than the distance at the lower margins of eyes; anterior margin of clypeus incised to 0.25 × length of clypeus, lateral corners rounded; labrum shiny, punctures faint and sparse, microsculpture indistinct; clypeus shiny, punctures fine, apically very sparse and basally slightly denser, microsculpture indistinct. Malar space 1.4 × as long as diameter of median ocellus. Inner margins of eyes subparallel in frontal view, distance between eyes 1.9 × as long as height of eyes (Fig. 2B). In dorsal view, inner margins of eyes subparallel, the length of temple 0.3 × as long as length of eyes; middle fovea subcircular and slightly shallow, with a fine longitudinal groove at bottom extending to the frons. Frontal area slightly convex, with a median longitudinal groove, shiny, punctures small and slightly sparse, wrinkles distinct; anterior wall elevated, notched medially, lateral walls low and blunt. Interocellar furrow very broad and shallow, postocellar furrow narrow and shallow; circumocellar furrow indistinct; POL : OOL : OCL = 1.2 : 1.2 : 1.0 (Fig. 2A). Vertex and postocellar area strongly shiny, punctures small and sparse, without microsculpture; postocellar area convex, middle furrow indistinct, approx. 2.4 × as wide as long, lateral postocellar furrows narrow and deep, divergent backward distinctly (Fig. 2A). Antenna filamentous, slightly shorter than thorax and abdomen together, antennomere 3 slightly compressed; relative length of antennomere 3 : antennomere 4 : antennomere 5 = 1 : 1.1 : 1 (Fig. 2C).

Thorax. Mesonotum shiny, punctures small and slightly dense, microsculpture indistinct; median mesoscutal groove shallow and thin, extending to the apex; mesoscutellum and mesoscutellar appendage smooth and shiny, with some faint punctures, without microsculpture, mesoscutellum flat, middle ridge indistinct, the length 1.1 × as long as wide; mesoscutellar appendage about 0.3 × length of scutellum, without middle ridge (Fig. 2D). Distance between cenchri about 0.9 × as long as breadth of a cenchrus (Fig. 2D). Mesepisternum shiny, with fine and slightly dense punctures, without microsculpture, lower part with glabrous area; mesepimeron smooth and shiny, punctures indistinct, posterior part with microsculpture; metapleuron smooth and shiny, posterior part of metepisternum with some fine punctures, posterior part of metepimeron with microsculpture (Fig. 2E). Subbase of vein M in the forewings curved, significantly longer than vein R+M, cross-vein cu-a joining cell 1M at basal 0.5, cell 2Rs 2.2 × as long as cell 1R1, vein Rs vestigial; petiole of anal cell of hindwing 1.7 × as long as cu-a, and cu-a straight.

Abdomen. All abdominal terga shiny, with small and sparse punctures, microsculpture fine and dense, with some wrinkles. Ovipositor sheath shiny, with small and sparse punctures, microsculpture faint; sheath 1.6 × as long as metatarsomere 1 and 1.1 × as long as front tibia, valvula 3 about as long as valvifer 2; in lateral view, posterior margin

of valvula 3 slightly rounded (Fig. 2F); in dorsal view, valvula 3 tapering toward the apex; cercus slightly tapering apically, longer than valvula 3, 6 × as long as wide. Saw-sheath setae moderately curved, angle between most lateral setae of valvula 3 about 60° (Fig. 2G). Lancet with 15 serrulae, proximal denticles indistinct, each middle serrula with 3–4 distal denticles, cypsellae with arcuate emargination (Fig. 3A, B); annular suture 1 straight, sutures 1–9 with setae bands, longest setal band about 0.2 times as long as the length of annulus; tangium narrow and 4.1 × as long as annulus 1, radix 0.5 × as long as lamnium, the basal angle slightly acute, dorsal margin nearly flat (Fig. 3A, C).

Legs. Protarsomere 1 0.8 × as long as combined length of tarsomeres 2–4; hind tibia 1.2 × as long as hind tarsus, inner apical spur of hind tibia 0.5 × as long as metatarsomere 1, metatarsomere 1 0.8 × as long as combined length of metatarsomeres 2–5; tarsal claw with inner tooth slightly shorter than outer tooth.

Male. Body length approximately 5.5 mm. Body color and structure similar to the female except for following characters (Fig. 1C, D): posterior margin of pronotum yellowish-brown; antennal flagellum ventrally dark brown, flagellomere 3 distinctly laterally compressed and flagellomeres 4–5 slightly compressed; cercus short, 2.5 × as long as wide; the 8 tergum without procidentia (Fig. 2H); gonoforceps as shown in Fig. 3D, harpes inner surface swollen over basal third, apical width 0.3 × basal width; penis valve with narrow lobiform process slightly shorter than broad lobiform process, both processes dorsally inclined; broad lobiform process gradually narrowing from midlength toward apex, lateral margins converging at 145°; basal interval between processes 0.5 × basal width of narrow lobiform process (Fig. 3E).

Etymology. The specific epithet "*rufitegularis*" is derived from the reddish-brown coloration of the tegulae.

Distribution. China: Zhejiang.

Variation. Body length 6.0–7.0 mm in the females; labrum dusky brown to yellowish-brown; basal part to most of vein C in the forewing yellowish-brown; stigma occasionally brown medially; posterior margin of pronotum occasionally partially blackish-brown; cercus 6.0–7.0 × as long as wide; petiole of anal cell of hindwing 1.6–1.8 × as long as cu-a. In males, small parts of the posterior margin of the metanotum drak brown or yellowish-brown; cercus 2.0–3.0 × as long as wide.

Remarks. The new species is similar to *P. japonicus* Togashi, 1991, but can be distinguished by the following combination of characters: pronotum black; legs yellowish-white to reddish-brown; tegula reddish-brown; metatarsomere 1 slightly shorter than the combined length of metatarsomeres 2–4; lancet with 15 serrulae; harpes of the gonoforceps apically about 0.3 × as wide as basally, on the inner surface without tubercle, swollen at the basal third; penis valve with narrow lobiform process slightly shorter than broad lobiform process, basal interval between processes 0.5 × basal width of narrow lobiform process. In contrast, *P. japonicus* has yellowish or pale yellow pronotal lobes and tegula; legs yellow; metatarsomere 1 slightly longer than the combined length of metatarsomeres 2–4; lancet with 20 serrulae; harpes of the gonoforceps apically about 0.25 × as wide as basally, with a small tubercle medially on the inner surface, swollen at the basal third; penis valve with narrow lobiform process distinctly shorter than broad lobiform process, basal interval between processes 0.2 × basal width of narrow lobiform process.

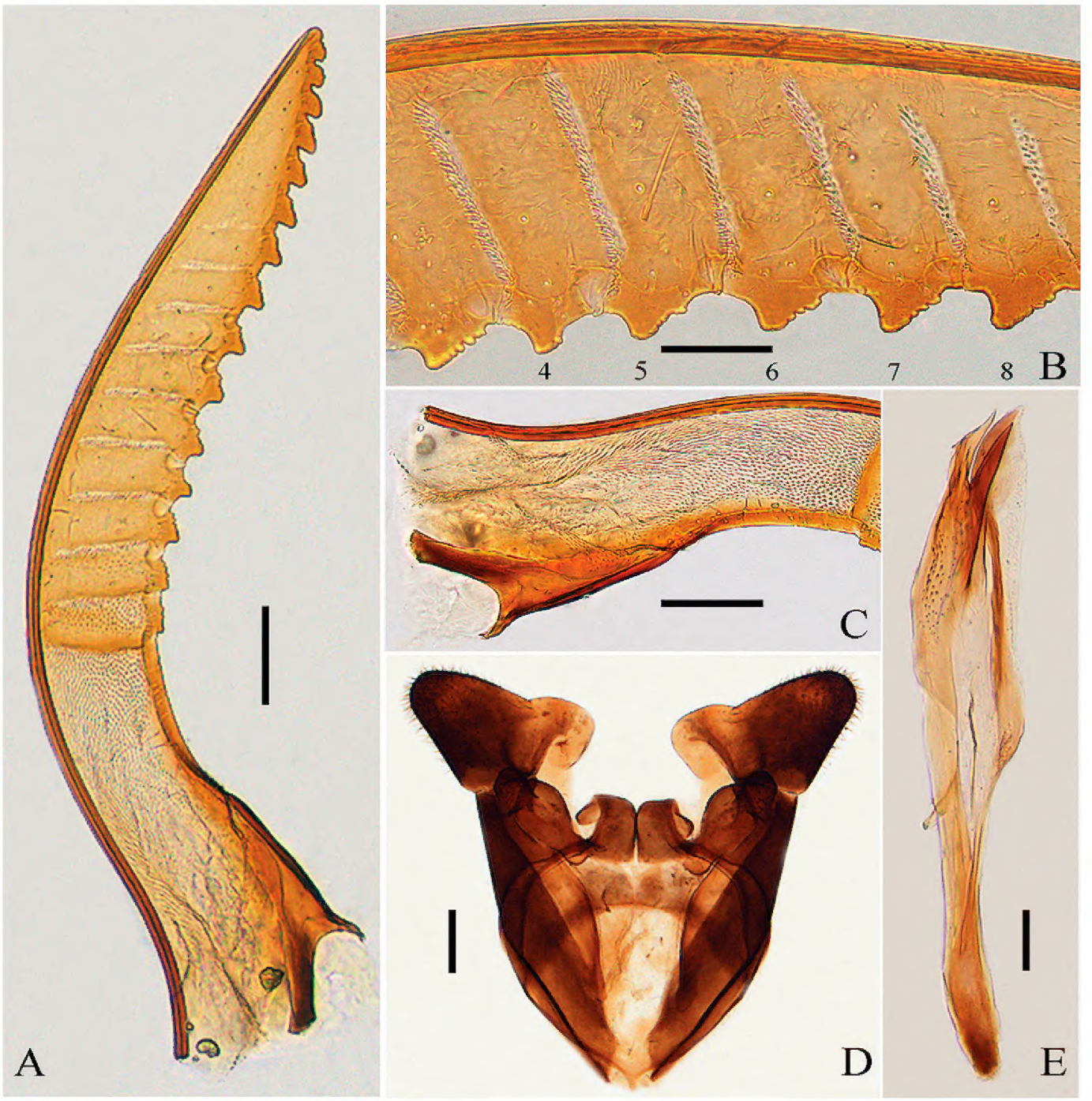

Figure 3. Genitalia of *P. rufitegularis* sp. nov. **A** female, lancet **B** female, 4th–8th serrulae **C** female, tangium **D** male, gonoforceps **E** male, penis valve. Scale bars: 200 μm (**A, D**); 50 μm (**B**); 100 μm (**C, E**).

Platycampus linealis Liu & Wei, 2024

Fig. 4

Material examined. ***Holotype*,** • male, China: Zhejiang Province, Hangzhou City, Lin'an District, Mt. Qingliangfeng, Longtangshan, 30°06.680'N, 118°54.050'E, 930 m, 26 April 2010, leg. Mingcan Yao.

Diagnosis. Body length 7.5 mm; body black; legs yellowish-brown; stigma and wing veins blackish-brown (Fig. 4A, B); clypeal emargination triangular, anterior margin incised to 0.3 × length of clypeus; malar space 1.2 × as long as diameter of median ocellus; inner margins of eyes convergent in frontal view (Fig. 4D); frontal area not elevated, medially slightly depressed, anterior wall notched medially; interocellar furrow broad and shallow, postocellar furrow narrow and shallow; POL : OOL : OCL = 1 : 1.7 : 1.3; postocellar area convex, middle furrow indistinct, approx. 3.0 × as wide as long (Fig. 4C); median mesoscutal groove shallow and thin, extending to the apex;

Figure 4. Characters of *P. linealis* Liu & Wei, 2024, male, holotype **A** dorsal habitus **B** lateral habitus **C** head, dorsal view **D** head, anterior view **E** antenna, lateral view **F** thoracic notum **G** thoracic pleuron **H** gonoforceps **I** penis valve. Scale bars: 200 μm (**F**); 100 μm (**G**).

distance between cenchri about 0.9 × as long as breadth of a cenchrus (Fig. 4F); lower part of mesepisternum with glabrous area; posterior margin of metepimeron rounded (Fig. 4G); harpes apex subacute, inner surface with small medial tubercle, basal 0.4 of length distinctly swollen (Fig. 4H); penis valve with basal width of narrow lobiform process 0.8 × that of broad lobiform process, narrow process shorter than broad process, broad lobiform process abruptly narrowing from midlength toward apex, lateral margins converging at 135° (Fig. 4I).

Etymology. The specific epithet "*linealis*" is derived from the slender longitudinal groove in the center of the middle fovea.

Distribution. China: Zhejiang.

Platycampus xini **Liu & Wei, 2025**
Fig. 5

Material examined. ***Holotype*****,** • female, China: Gansu Province, Tianshui City, Maiji District, Mt. Xiaolong, Dongcha forestry station, Taohuagou, 34°18'59.3"N, 106°34'22.6"E, 1180 m, 11 June 2009, leg. Heng Xin.

Diagnosis. Body length 8.0 mm; legs pale yellow; valvula 3 with black macula, stigma and wing veins yellowish-brown (Fig. 5A, B); clypeal emargination arcuate, anterior margin incised to 0.4 × length of clypeus; malar space 1.7 × as long as diameter of median ocellus; inner margins of eyes subparallel in frontal view (Fig. 5D); middle fovea elliptical, small and shallow; frontal area not elevated, anterior wall indistinctly notched medially; POL : OOL : OCL = 1 : 1.4 : 1.2; postocellar area convex, middle furrow indistinct, approx. 1.7 × as wide as long (Fig. 5C); relative length of antennomere 3 : antennomere 4 : antennomere 5 = 1.2 : 1.2 : 1 (Fig. 5E); median mesoscutal groove shallow and thin, extending to the apex; distance between cenchri about as long as breadth of a cenchrus

Figure 5. Characters of *P. xini* Liu & Wei, 2025, female, holotype **A** dorsal habitus **B** lateral habitus **C** head, dorsal view **D** head, anterior view **E** antenna, lateral view **F** thoracic notum **G** thoracic pleuron **H** ovipositor sheath, lateral view **I** ovipositor sheath, dorsal view **J** lancet **K** apical serrulae **L** 4th–8th serrulae **M** tangium. Scale bars: 200 μm (**F**); 100 μm (**G**).

(Fig. 5F); lower part of mesepisternum with glabrous area; posterior margin of metepimeron nearly truncate (Fig. 5G); valvula 3 1.3 × as long as valvifer 2; in lateral view, sheath slightly curved, posterior margin of valvula 3 slightly rounded (Fig. 5H); in dorsal view, valvula 3 tapering toward the apex; cercus slightly tapering apically, nearly flush with the apex of valvula 3, 7 × as long as wide (Fig. 5I); lancet with 17 serrulae, each middle serrula with 1 proximal denticles and 3–6 distal denticles, denticles robust, cypsellae convex; annular suture 1 oblique but straight, sutures 1–14 with setae bands, longest setal band about 0.5 times as long as the length of annulus; tangium short and 2.8 × as long as annulus 1, radix 0.5 × as long as lamnium, the basal angle rounded, dorsal margin flat (Fig. 5J–M).

Etymology. The specific epithet "*xini*" is derived from the family name of the holotype collector.

Distribution. China: Gansu.

Key to world species of *Platycampus*

Females

1	All femora and tibiae at least partially black **2**
–	All femora and tibiae entirely light **5**
2	Base of all coxae or at least the dorsal part of hind femora black; abdominal sternites black **3**
–	All coxae and femora yellow to reddish-brown; abdominal sternites usually reddish-brown. Japan, Europe..... ***P. luridiventris* (Fallén, 1808)**
3	At least the major distal portion of vein C in the forewing dark brown; stigma dark brown; hind femora entirely or mostly black; tarsal claw with inner tooth shorter than outer tooth **4**
–	Vein C in the forewing and stigma yellowish-grey; hind femora pale yellow, with black on the dorsal apical portion; tarsal claw with inner tooth subequal to outer tooth. Russia ..... ***P. zhelochovtsevi* Zinovjev, 1986**
4	Hind femora entirely black; hind tibiae mostly yellowish-white, with apical 1/3 dark brown; mesopleuron with denser setae on the upper part, sparser setae on the lower part. Russia ..... ***P. amaculatus* Verzhutskii, 1966**
–	Hind femora mostly black; hind tibiae mostly black, with the base ivory-white; mesopleuron with wide glabrous area, with denser setae on the lower part. Europe..... ***P. obscuripes* (Konow, 1896)**
5	Body length less than 8 mm..... **6**
–	Body length 8 mm (Fig. 5). China..... ***P. xini* Liu & Wei, 2025**
6	Vein C in the forewing pale yellow to yellow..... 7
–	Vein C in the forewing brown to black **8**
7	Most parts of mesepisternum, mesonotum except for mesoscutellar appendage usually reddish-brown; cercus brown to black; lancet with 15 serrulae (fig. 27 in Zinovjev (1986)). Russia ..... ***P. amurensis* Zinovjev, 1986**
–	Mesepisternum and mesonotum black; cercus pale yellow to yellow; lancet with 20 serrulae. Japan..... ***P. japonicus* Togashi, 1991**

8 Cercus 4–6 × as long as wide; mesopleuron with wide glabrous area **9**
– Cercus 11–16 × as long as wide (fig. 15 in Zinovjev (1986)); mesopleuron with narrow glabrous area. Russia ..... ***P. coryli* Zinovjev, 1986**
9 Labrum dusky brown; tegula reddish-brown; annular suture 1 of lancet straight, apical 5 sutures absent; serrulae deeply incised (Fig. 3A). China ..... ***P. rufitegularis* sp. nov.**
– Labrum black; tegula fawn brown; annular suture 1 of lancet curved, apical 1 suture absent; serrulae shallowly incised (fig. 28 in Zinovjev (1986)). Russia ..... ***P. speciosus* Zinovjev, 1986**

Males

1 Apical of hind tibiae and most parts of hind tarsi dark brown to black..... **2**
– Apical of hind tibiae and hind tarsi light **3**
2 Hind femora black; penis valve with narrow lobiform process slightly shorter than broad lobiform process, basal interval between processes approximately equal to basal width of narrow lobiform process, both processes inclined dorsally at the apex (fig. 31 in Zinovjev (1986)). Russia ..... ***P. zhelochovtsevi* Zinovjev, 1986**
– Hind femora yellow; penis valve with narrow lobiform process distinctly shorter than broad lobiform process, basal interval between processes 0.3 × basal width of narrow lobiform process, both processes nearly straight at the apex (fig. 30 in Zinovjev (1986)). Japan, Europe ..... ***P. luridiventris* (Fallén, 1808)**
3 Body length 4.5–6 mm; tegula light; at least the base of vein C in the forewing light-colored **4**
– Body length 7.5 mm; tegula black; vein C in the forewing dark brown (Fig. 4). China ..... ***P. linealis* Liu & Wei, 2024**
4 Antennal flagellum black or dark brown; hind coxae entirely light or basal margin black **5**
– Antennal flagellum yellow, with the base dorsally darkened; the base or nearly entirely of hind coxae black. Russia..... ***P. amurensis* Zinovjev, 1986**
5 Metatarsomere 1 slightly longer than the combined length of metatarsomeres 2–4; harpes of the gonoforceps apically about 0.25 × as wide as basally, with a small tubercle medially on the inner surface, swollen at the basal third (fig. 15 in Togashi (1991)); penis valve with narrow lobiform process distinctly shorter than broad lobiform process, basal interval between processes 0.2 × basal width of narrow lobiform process (fig. 16 in Togashi (1991)). Japan ..... ***P. japonicus* Togashi, 1991**
– Metatarsomere 1 slightly shorter than the combined length of metatarsomeres 2–4; harpes of the gonoforceps apically about 0.3 × as wide as basally, on the inner surface without tubercle, swollen at the basal third (Fig. 3D); penis valve with narrow lobiform process slightly shorter than broad lobiform process, basal interval between processes 0.5 × basal width of narrow lobiform process (Fig. 3E). China..... ***P. rufitegularis* sp. nov.**

Mitochondrial genome and phylogenetic analyses

The partial mitochondrial genome sequence of *P. rufitegularis* that we assembled was 16,103 bp, with an average coverage depth of 106× (Fig. 6). It was further examined by reassembly using *Hemichroa major* Rohwer, 1915 (unpublished) as references. The partial mitochondrial genome assembly comprises 13 protein-coding genes, 21 tRNAs, and 2 rRNAs, but lacks trnD and the control region. It was annotated and visualized as a circular map using Geneious Prime (Fig. 7). The A+T content of the *P. rufitegularis*

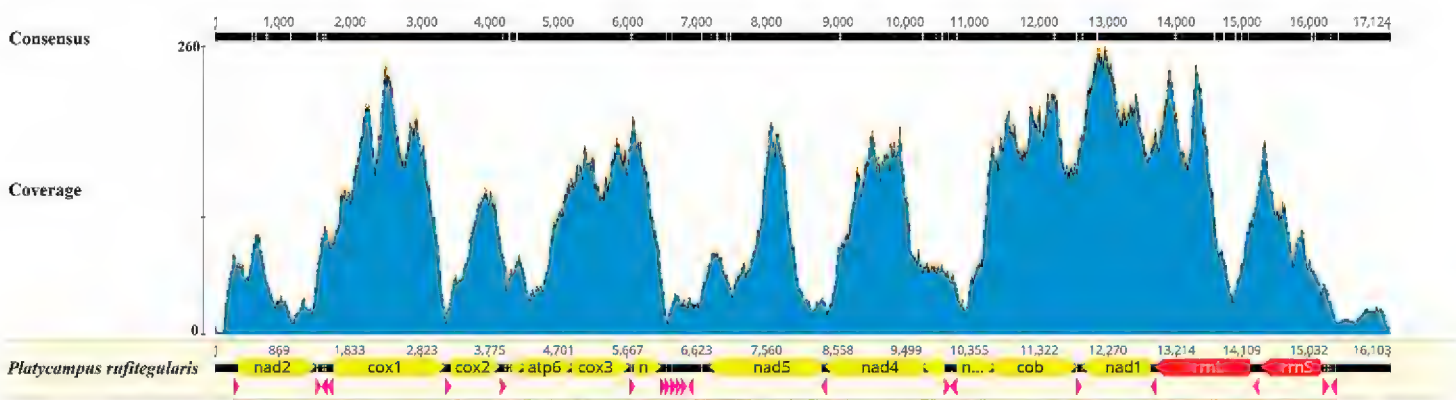

Figure 6. The coverage depth of mitochondrial genome of *P. rufitegularis* sp. nov. Black rectangle consensus sequence, Blue rectangle the coverage depth of mitochondrial genome.

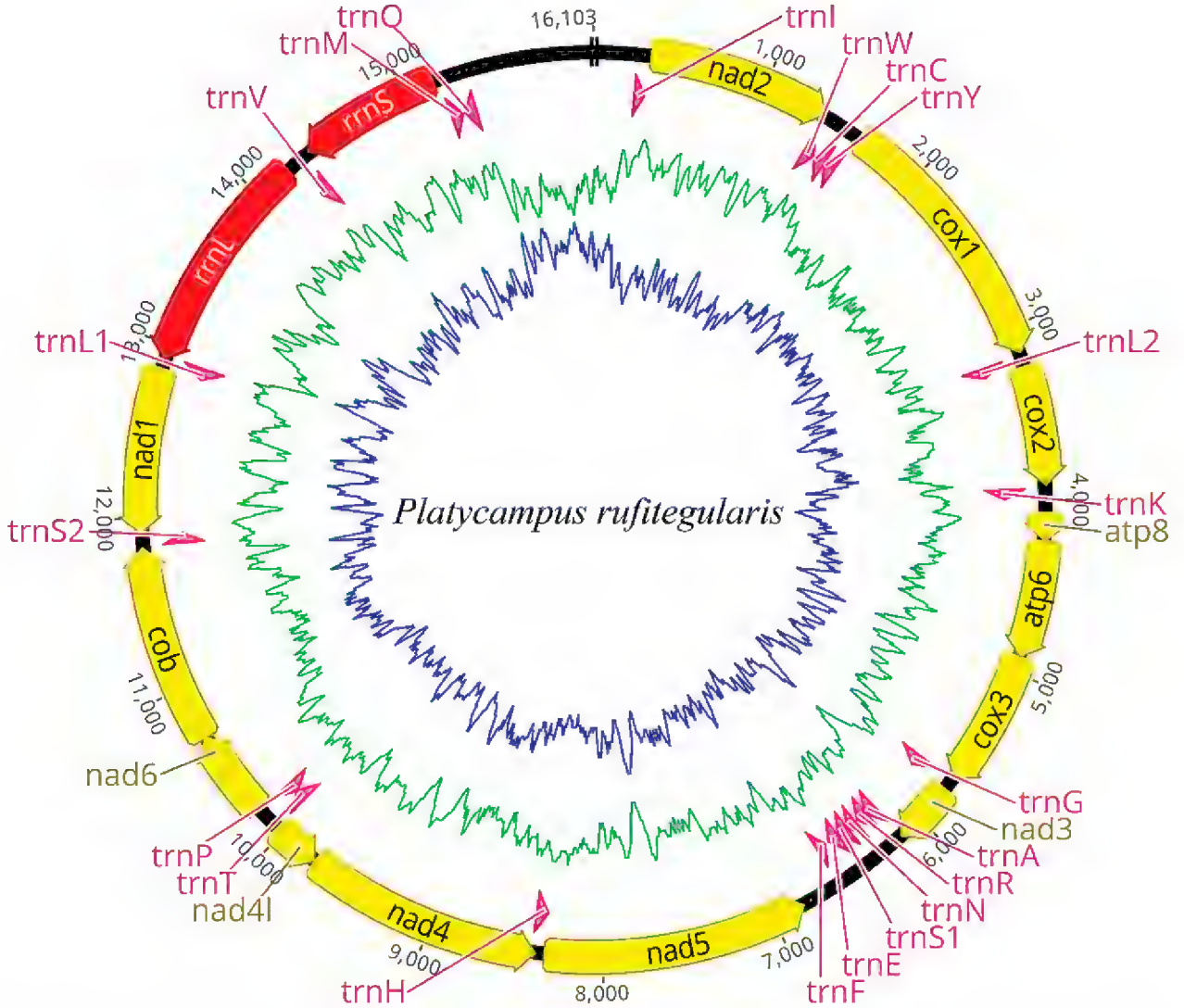

Figure 7. Circular map of the annotated partial mitochondrial genome of *P. rufitegularis* sp. nov. (PX129881). Outer ring: Protein-coding genes (yellow), tRNAs (pink), rRNAs (red). Inner ring: GC (bule) / AT (green) content.

mitochondrial genome is 80.1% (A: 43.0%, T: 37.1%, C: 11.8%, G: 8.0%). All PCGs initiated by ATN codons and ended with TAA stop codons. Eight tRNAs (trnC, trnY, trnF, trnH, trnP, trnL1, trnV, trnQ), two rRNAs and four PCGs (nad1, nad4, nad4L, and nad5), were located on the N-strand, while the J-strand encoded the remaining. The best-fitting model for the COI alignment was GTR+I+G. Phylogenetic analysis (ML) resolved the following relationships with strong support: (1) *P. rufitegularis* forms a sister pair with *P. amurensis* (BS=100); (2) This clade is sister to *P. speciosus* (BS=98); (3) The combined lineage is sister to *P. luridiventris* (BS=98); (4) The monophyletic genus *Platycampus*, encompassing the four species above, is sister to the genus *Dineura*, albeit with low support (BS = 51) (Fig. 8).

Discussion

This study establishes *P. rufitegularis* sp. nov. as a phylogenetically and morphologically validated species, confirming its placement within *Platycampus*. As the third species of the genus recorded in China, this discovery elevates the global diversity of *Platycampus* to eleven recognized species. We compiled the distribution and host plant data for all eleven known species of *Platycampus* (Table 2), revealing a geographic range spanning Europe, Russia, Japan, and China, with larval development restricted exclusively to Betulaceae hosts (*Betula*, *Alnus*, *Corylus*). However, host plants remain undocumented for five *Platycampus* species, including all Chinese species (Table 2). We hope subsequent studies will identify the larval host plants of the Chinese species.

P. linealis and *P. xini* were described in Wei (2024) and Li and Wei (2025), respectively. Although the description of *P. linealis* was based on a single male and that

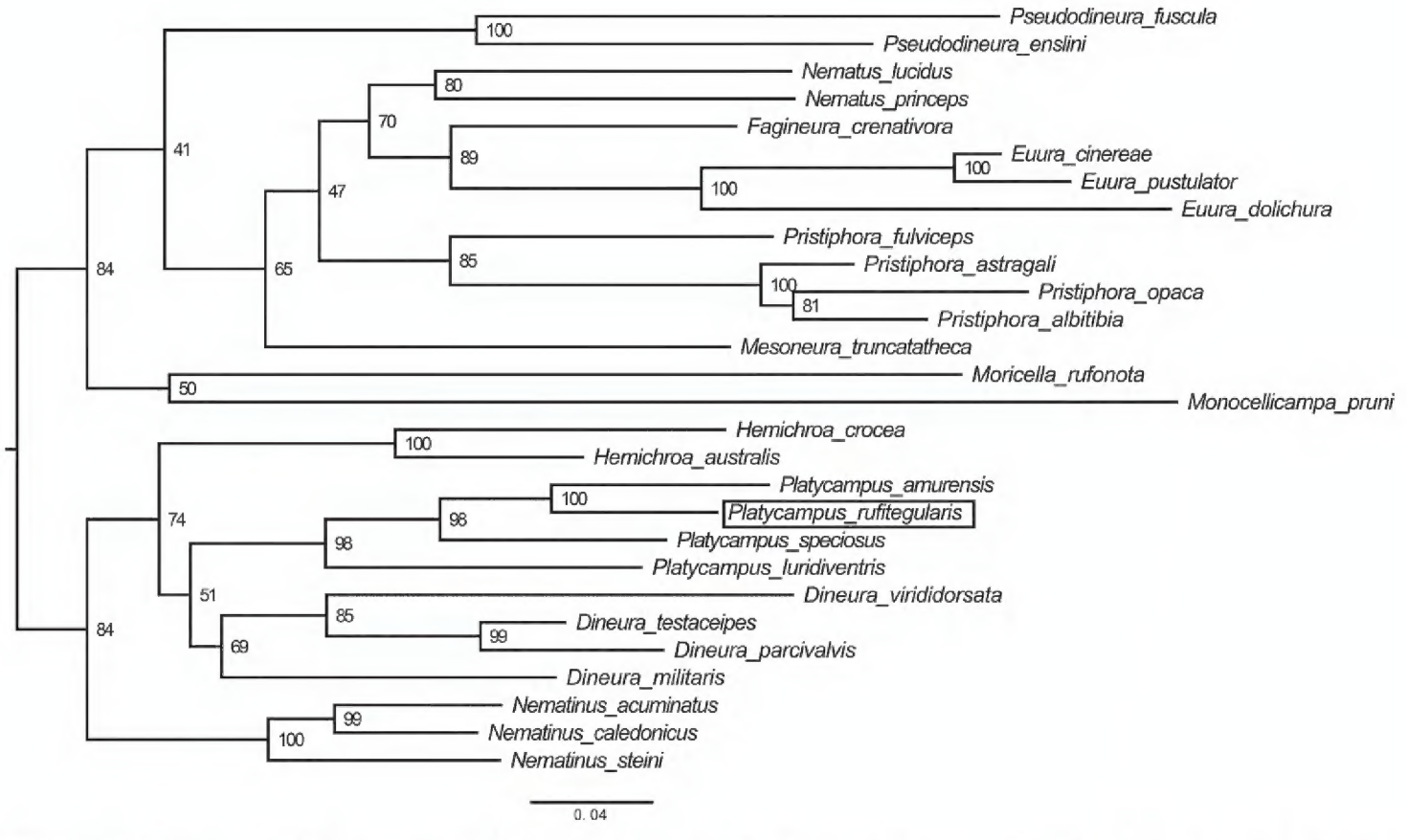

Figure 8. Maximum likelihood tree of *Platycampus* and other Nematinae genera based on COI gene (1078bp).

Table 2. Distribution and host of the genus *Platycampus*.

Species	Distribution	Host	Reference
P. amaculatus Verzhutskii, 1966	Russia	*Betula pendula*; *Alnus mandshurica*	Verzhutskii (1966); Zinovjev (1986)
P. amurensis Zinovjev, 1986	Russia	*Corylus heterophylla*	Zinovjev (1986)
P. coryli Zinovjev, 1986	Russia	*Corylus mandshurica*	Zinovjev (1986)
P. japonicus Togashi, 1991	Japan (Honkkaido, Honshu)	unknown	Togashi (1991)
P. linealis Liu & Wei, 2024	China (Zhejiang)	unknown	Wei (2024)
P. luridiventris (Fallén, 1808)	Europe; Japan	*Alnus* spp.	Fallén (1808); Brischke (1883); Enslin (1915); Blank et al. (2009)
P. obscuripes (Konow, 1896)	Europe	unknown	Konow (1896)
P. rufitegularis sp. nov.	China (Zhejiang)	unknown	present study
P. speciosus Zinovjev, 1986	Russia	*Alnus hirsuta*	Zinovjev (1986)
P. xini Liu & Wei, 2025	China (Gansu)	unknown	Li and Wei (2025)
P. zhelochovtsevi Zinovjev, 1986	Russia	*Alnus hirsuta*	Zinovjev (1986)

of *P. xini* on a single female, they are considered distinct species due to clear morphological differences. In *P. linealis*, malar space 1.2 × as long as diameter of median ocellus; inner margins of eyes convergent in frontal view; interocellar furrow broad and shallow; POL : OOL : OCL = 1 : 1.7 : 1.3; postocellar area approx. 3.0 × as wide as long; posterior margin of metepimeron rounded; subbase of vein M in the forewings slightly longer than vein R+M. In *P. xini*, however, malar space 1.7 × as long as diameter of median ocellus; inner margins of eyes subparallel in frontal view; interocellar furrow slightly narrow and shallow; POL : OOL : OCL = 1 : 1.4 : 1.2; postocellar area approx. 1.7 × as wide as long; posterior margin of metepimeron nearly truncate; subbase of vein M in the forewings significantly longer than vein R+M. Nevertheless, the differences between the single male and single female specimens of *P. linealis* and *P. xini* could be due to sexual dimorphism and / or within species variation. Sampling of additional specimens should resolve the issue. Furthermore, it is possible that the reddish-brown body colouration observed in the single known specimen of *P. xini* is not the original colour. The current hue may be the result of discolouration due to prolonged preservation in alcohol, or it could represent the colour of a teneral (newly emerged) adult. As only one specimen is available, the true body colour of this species cannot be definitively confirmed.

The COI-based maximum likelihood tree of *Platycampus* and other Nematinae genera was reconstructed to determine the taxonomic placement of the new species. The results show that the new species clusters with other *Platycampus* species, supporting the monophyly of the genus. Additionally, a sister-group relationship between *Platycampus* and *Dineura* was inferred, albeit with weak support. It is consistent with the placement of *Platycampus* within Dineurini in earlier four-gene studies (Prous et al. 2014, 2019). Although a more recent analysis employed an expanded dataset of ten genes (Prous et al. 2025), its taxon sampling for Dineurini was limited. Therefore, within Dineurini, the only relationship that appears to be well-supported is the placement of *Hemichroa* as sister to the other genera (Prous et al. 2019, 2025), while the relationships among the remaining genera remain unresolved.

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